

Dorippidae (Crustacea Decapoda Brachyura) collected in Madagascar waters

by Huilian CHEN

Abstract. — Trawling and dredging off Madagascar resulted in the collection of eight species of Dorippidae belonging to five genera. Except for two, all are deep-sea species. Three of them are new to Science and four others had never been reported from Madagascar.

Résumé. — Des chalutages et des dragages autour de Madagascar ont permis la récolte de huit espèces de Dorippidae appartenant à cinq genres. Toutes ces espèces, sauf deux, vivent en eau profonde; trois sont nouvelles pour la Science et quatre autres n'avaient jamais été signalées à Madagascar.

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The present report is based upon specimens collected by Alain CROSNIER around Madagascar in 1958-1960 and 1972-1975. Eight species belonging to five genera are identified. Three species are new for Science and four others had never been reported from Madagascar.

Except for two species (*Dorippe frascone* and *Dorippoides nudipes*) collected in the intertidal zone or on the continental shelf, all the species studied in this paper are from deep waters.

Dorippidae are widespread in the Indo-West-Pacific but, until now, there are only a few records from the south-western Indian Ocean : DOFLEIN (1904) described two new species, *Ethusa zurstrasseni* and *E. somalica*, from deep waters of the east african coast near the equator and mentioned *Ethusina abyssicola* Smith, 1882, a very deep species, off Kenya. BARNARD (1950) recorded *Dorippe dorsipes* (Linnaeus, 1758) = *D. frascone* (Herbst, 1785) from Mozambique and South Africa (Delagoa Bay). LENZ (1910), FOURMANOIR (1954, under the name *Dorippe* sp.) and THOMASSIN (1978) reported the same species from Madagascar (Tuléar) and KENSLEY (1969) described a new species, *Ethusa sinespina*, from deep waters of South Africa (Natal). STEBBING (1910) and BARNARD (1950, 1955) mentioned *Dorippe lanata* (Linnaeus, 1767), which is an Atlantic species, off Natal and Mozambique; it is possible that the specimens seen by STEBBING and BARNARD belong to the species described in this paper as new under the name *Medorippe crosnieri*.

The frontal teeth of some species being long or short, all the carapace lengths, in this paper, are measured from the bottom of the median notch of the front to the posterior border of the carapace.

SYSTEMATIC ACCOUNT

Subfamily DORIPPINAE MacLeay, 1838

Genus DORIPPE Weber, 1795

Dorippe frascone (Herbst, 1785)

(Pl. I A)

Cancer frascone Herbst, 1785 : 192.

Dorippe frascone; THOMASSIN, 1978, annexe 3 : 61; CHEN, 1986a : 182, figs. 2a-b; 1986b : 119-120, figs. 1-2 (4, 6, 8); KENSLEY, 1981 : 38.

Dorippe dorsipes; BORRADAILE, 1903 : 439; LENZ, 1910 : 545; STEPHENSEN, 1945 : 63, figs. 4a-b; BARNARD, 1950 : 390, fig. 73.

Dorippe sp.; FOURMANOIR, 1954 : 15.

MATERIAL EXAMINED. — Madagascar, N.O. "Vauban", N.W. Coast : Ambaro Bay, trawling, 5 m, mud : 5 ♂ 19.6 × 20.0 — 23.4 × 24.9 mm; 5 ♀ (4 ovig.) 20.8 × 22.8 — 28.0 × 30.2 mm (MP-B 11172); 1 juv. 6.7 × 6.6 mm; 4 ♂ 18.5 × 19.0 mm — 26.0 × 26.5 mm; 1 ♀ 26.5 × 29.0 mm (MP-B 18279). — *Ibidem*, trawling, 5 m, mud : 1 ♂ 26.0 × 28.0 mm; 6 ♀ 20.6 × 21.0 mm — 26.2 × 28.5 mm (MP-B 18356). — Nosy Komba, trawling, 17 m, sand and shells : 1 juv. 5.5 × 5.3 mm (MP-B 11176). — *Ibidem*, trawling, 17-20 m : 1 juv. ♀ 11.5 × 11.3 mm (MP-B 11174). — Mitsio Ids, trawling, 60 m, sandy mud : 1 ♂ juv. 5.9 × 5.8 mm (MP-B 18351). — Nosy Be, trawling : 1 ♂ 26.5 × 27.5 mm; 1 ♀ ovig. 24.0 × 25.9 mm; 1 ♀ 27.0 × 29.9 mm (MP-B 11173). — Narendry Bay, trawling, 7 m, mud : 1 ♂ juv. 6.9 × 6.5 mm (MP-B 18353). — 12°55.2'S-48°28.2'E, trawling, 42 m : 1 juv. 10.0 × 10.5 mm (MP-B 11175).

REMARKS. — The carapace is broader than long in adult but as long as broad or even longer than broad in juvenile.

DISTRIBUTION. — This species has a very wide distribution in the Indo-West-Pacific region from East and South coasts of Africa to Australia, China and Japan. *Dorippe frascone* is a shallow water species and has been collected mostly from waters of 5-60 m deep. BARNARD mentioned it at 415 m deep but that may have been erroneous.

Genus DORIPPOIDES Serène and Romimohtarto, 1969

Dorippoides nudipes Manning and Holthuis, 1986

(Fig. 1; pl. I B-C)

Dorippoides nudipes Manning and Holthuis, 1986 : 364, fig. 1c.

MATERIAL EXAMINED. — Madagascar, N.O. "Vauban", N.W. coast, Ambaro Bay, trawling, 3 m : 3 ♂ 16.1 × 18.5 — 21.0 × 26.0 mm; 3 ♀ 18.2 × 22.0 — 19.2 × 23.1 mm (MP-B 11165); 1 ♂ 16.0 × 19.0 mm (MP-B 18276). — W. coast, Maintirano, trawling : 1 juv. 9.2 × 11.0 mm; 1 ♂ 21.7 × 26.0 mm (MP-B 18275); W. coast, Pracel Shoal, trawling, 65 m, grey mud : 1 ♂ 19.5 × 23.0 mm (MP-B 18352). —

— Red Sea, Ethiopia, Massawa, Israel South Red Sea Exp., st. E62/4115, trawling : 1 ♂ holotype 17 × 19 mm (RMNH-D 35530).

DESCRIPTION

Carapace broader than long; dorsal surface naked or sparsely covered with short hairs. Protogastric and metagastric regions with fine granules. Cardiac-intestinal regions smooth but with some hairs. Exorbital tooth at the same level as frontal one in the largest male, while slightly longer in other specimens. Anterolateral borders and adjacent area with coarse granules.

Chelipeds very or slightly asymmetrical (right larger than left) or symmetrical. Outer surface of merus covered with small granules. Palm smooth. Fingers with small teeth along their cutting edges.

Second and third pereiopods slender and not hairy except in the two largest males which have the distal half of the posterior border of the third pereiopod covered with short hairs (fig. 1d); propodus 3.5-3.7 times longer as broad; dactylus broadest at its distal fourth rather than at its middle.

REMARKS. — The two largest males differ from the holotype by the presence of hairs on the posterior border of the merus of the third pereiopod.

This species is near *Dorippoides facchino* (Herbst, 1782) but the two species can be separated easily as shown in the table 1.

TABLE 1. — Main differences between *Dorippoides facchino* and *D. nudipes*.

	<i>D. facchino</i>	<i>D. nudipes</i>
1. Carapace	with a dense cover of short hairs	sparsely covered with short hairs
2. Posterior border of merus, carpus and propodus of P2 and P3	with a fringe of short hairs	hairless (or with short hairs only on distal half of posterior border of merus of P3)
3. Propodus of P3	short (2.5-2.9 times as long as broad)	long (3.5-3.7 times as long as broad)
4. Dactylus of P2 and P3	broadest at midlength	broadest at distal fourth

DISTRIBUTION. — Red Sea and Madagascar.

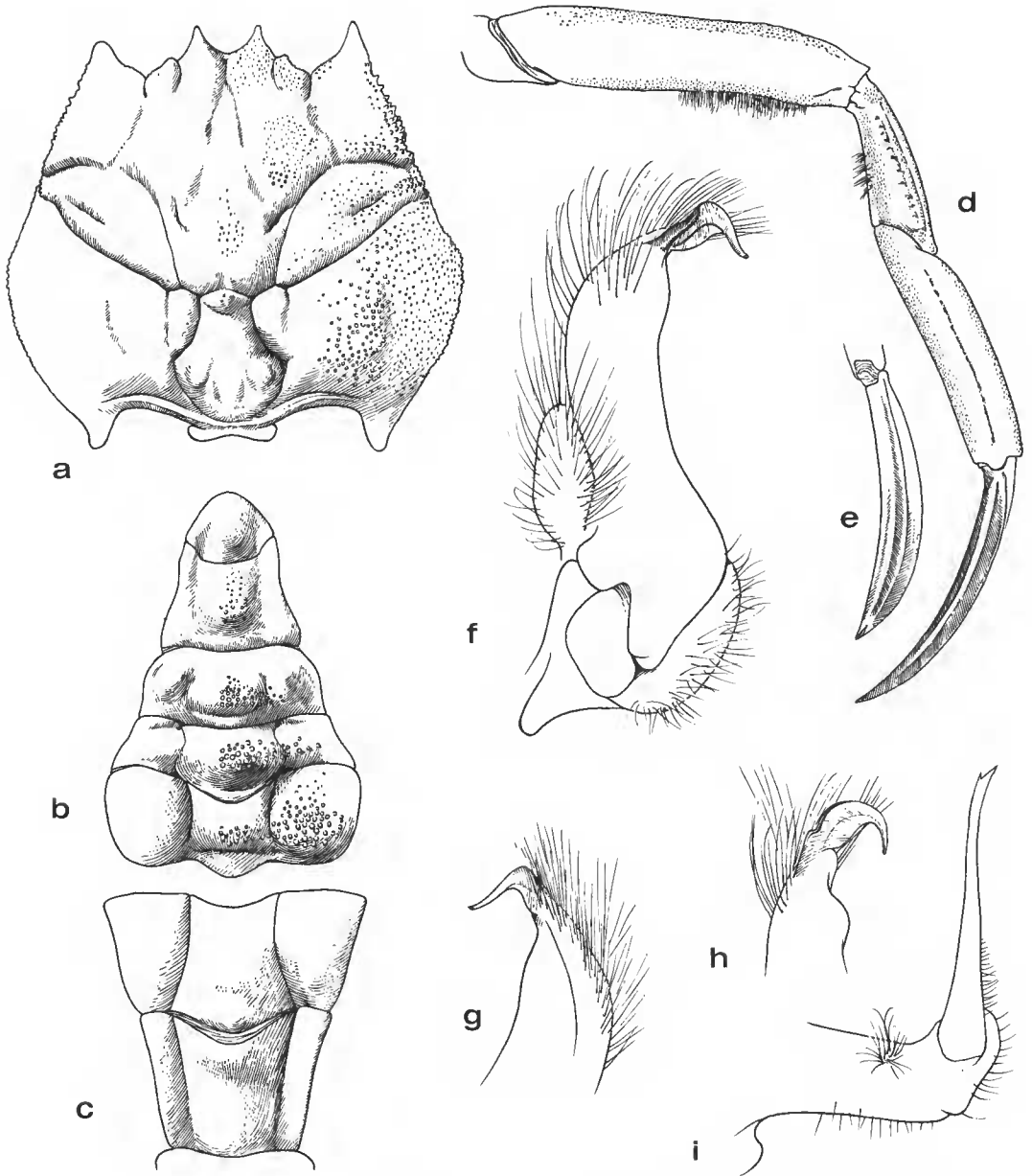


FIG. 1. — *Dorippoides nudipes* Manning and Holthuis, 1986, ♂ 21.7 × 26.2 mm (MP-B 18279) : a, carapace; b, abdomen, somites 3-7; c, *idem*, somites 1-2; d, third pereiopod; e, dactylus of third pereiopod; f-h, first pleopod; i, second pleopod.

Genus **MEDORIPPE** Manning and Holthuis, 1981

Medorippe crosnieri sp. nov.

(Fig. 2; pl. I D-E)

? *Dorippe lanata*; STEBBING, 1910 : 339; BARNARD, 1950 : 389, fig. 73b; 1955 : 4; KENSLEY, 1981 : 38.

MATERIAL EXAMINED. — Madagascar, N.O. "Vauban", N.W. coast : trawling 44, 15°25.7' S-46°01.0' E, 200-210 m : 2 ♂ immature 10.0 × 12.0 and 13.0 × 15.8 mm (MP-B 18358) — Trawling 47, 15°20.0' S-46°11.8' E, 245-250 m : 1 ♂ 15.7 × 19.9 mm (MP-B 18219). — Trawling 52, 15°21.0' S-46°12.5' E, 150 m : 1 ♀ juv. 9.9 × 12.0 mm (MP-B 18365).

TYPES. — The male (MP-B 18219) collected during the trawl 47 is the holotype; the others specimens are the paratypes.

DESCRIPTION

Body and appendages (except fingers of chelipeds and dactylus of ambulatory legs) sparsely covered with short hairs. Carapace broader than long ($l/L = 1.27$), dorsal surface with low tubercles and fine granules. Grooves distinct and smooth. Cardiac region with typically "V"-shaped granular ridge. Exorbital tooth slightly longer than frontal one. Infra orbital tooth long and smooth. Epibranchial spines medium sized and smooth.

Chelipeds symmetrical. Palm $3/4$ as long as broad; outer surface covered with short hairs, inner one smooth and hairless. Cutting edge of the fingers armed with blunt teeth.

Second and third pereopods slender. Merus 4.4-5.0 times longer than broad; carpus and propodus long; dactylus longer than propodus. Basal part of merus of second pereopod armed with some small teeth.

Male abdomen with 7 somites. Telson bluntly triangular.

REMARKS. — This new species is very similar to *Medorippe lanata* (Linnaeus, 1767) and, as we already mentioned, it is possible that the specimens from the Indian Ocean identified by STEBBING (1910) and BARNARD (1950, 1955) as *lanata* belong to our new species, but this is not quite certain as the collecting depths are rather different (see "Distribution" below). Unfortunately it was impossible to get these specimens on loan; they are not in the South African Museum and might be at the University of Witwatersrand in Johannesburg from which I could not get any answer.

The two species can be separated as shown in the table 2.

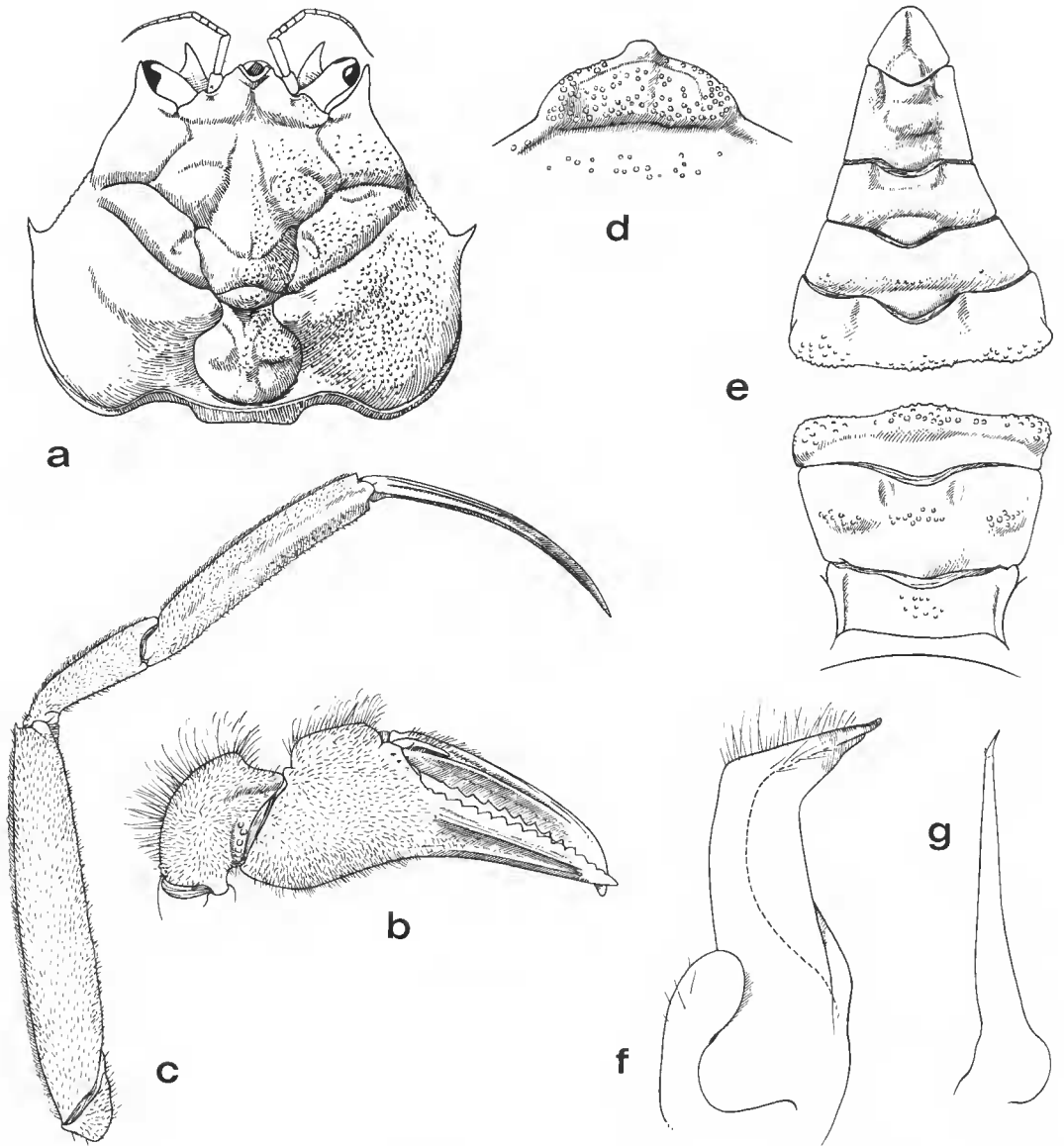


FIG. 2. — *Medorippe crosnieri* sp. nov., ♂ holotype 15.7 × 19.9 mm (MP-B 18219): a, carapace; b, cheliped; c, second pereiopod; d, anterior sternal shield; e, abdomen; f, first pleopod; g, second pleopod.

TABLE 2. — Main differences between *Medorippe lanata* and *M. crosnieri*.

	<i>M. lanata</i>	<i>M. crosnieri</i>
1. Body (except fingers of chelipeds and dactylus of P2 and P3)	with short club hairs	with short thin hairs
2. Carapace	with coarse granules and some granular tubercles	with similar granules and tubercles but all less prominent
3. Anterior border of merus of P2 and P3	with a row of crooked teeth	smooth except for a few low teeth on the basal part of the merus of P2
4. Surface of male abdomen	densely covered with rather long hairs	less densely covered with short hairs

DISTRIBUTION. — Until now, *M. crosnieri* is known with certainty only from the N.W. coast of Madagascar. The STEBBING and BARNARD's specimens, which possibly belong to this species, have been collected in Mozambique (Delagoa Bay) and South Africa (Natal), but at shallower depths : the specimens of Madagascar have been collected between 150 and 250 m, those of STEBBING and BARNARD at 46 m and between 55 and 84 m.

Medorippe lanata is known from the Eastern Atlantic and the Mediterranean Sea between 15 and 100 m.

Subfamily ETHUSINAE Guinot, 1977

Genus ETHUSA Roux, 1830

***Ethusa madagascariensis* sp. nov.**

(Fig. 3; pl. II A)

MATERIAL EXAMINED. — Madagascar, N.O. "Vauban" N.W. coast, trawling 52, 15°21.0'S-46°12.5'E. 150 m : 1 ♂ 7.0 × 6.9 mm (MP-B 18271); 1 ♀ 9.1 × 9.5 mm (MP-B 18366); 1 ♂ 6.0 × 5.9 mm and 1 ♀ 9.0 × 9.5 mm (MP-B 18360).

TYPES. — The male (MP-B 18271) is the holotype, the female (MP-B 18366) the allotype, the two other specimens (MP-B 18360) are the paratypes.

DESCRIPTION

Carapace longer than broad in male and broader than long in female (frontal teeth excepted); borders with short hairs; dorsal surface closely covered with granules. Grooves and

regions distinct; cardiac region raised. Frontal border divided into four teeth by three notches, one median deep and V-shaped, two lateral shallow and U-shaped. Exorbital tooth shorter than frontal ones, with a base stout and a tip acute and directed oblique outwardly.

Chelipeds symmetrical in both sexes; stouter in the male than in the female. Palm of the male smooth, swollen and longer than high; fingers shorter than palm, having indistinct small teeth on the cutting edges and gaping when closed. Palm of the female not swollen, longer than high; fingers longer than palm.

Second and third pereiopods very long, the third being the longest. Surface near posterior border of merus of P2 and P3 granulated, the rest without granules but with few short hairs on the border of each segment. Merus of second pereiopod 4.2 times longer than broad, of third 4.6 times.

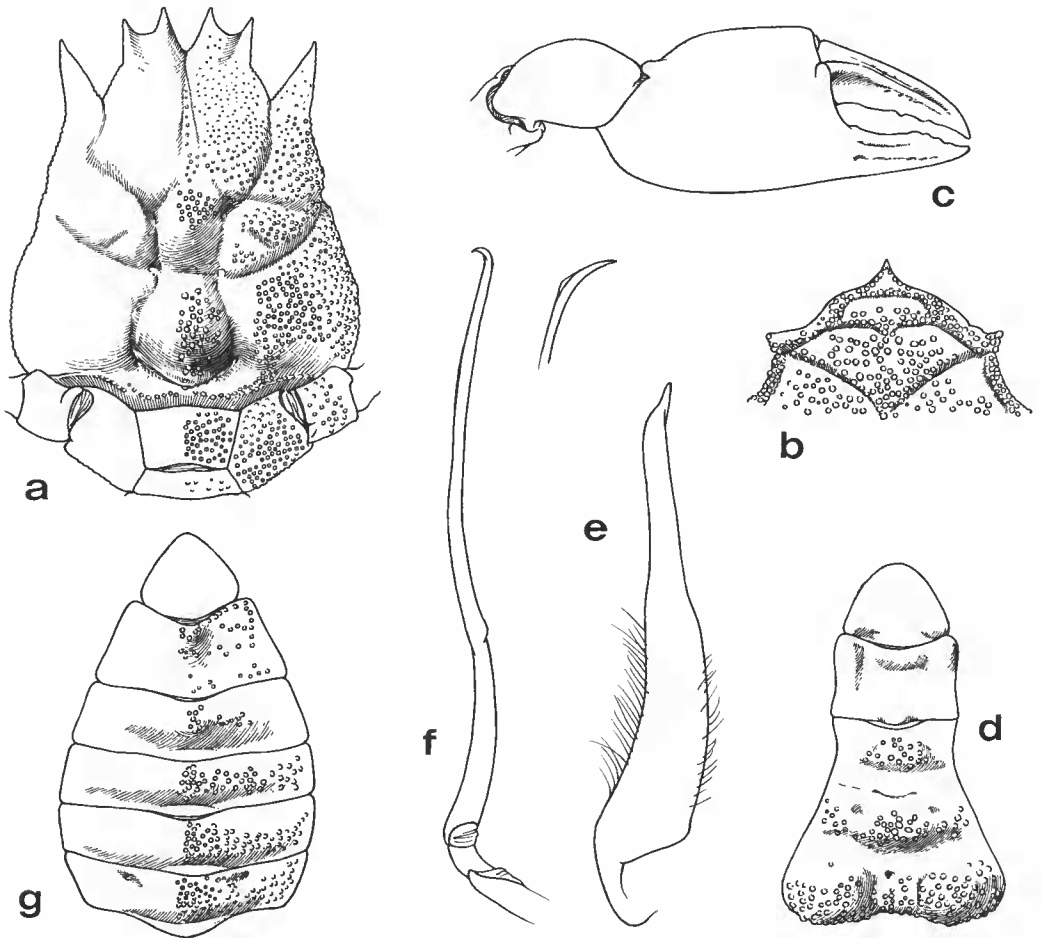


FIG. 3. — *Ethusa madagascariensis* sp. nov. : a-f, ♂ holotype 7.0 × 6.9 mm (MP-B 18271), a, carapace; b, anterior sternal shield; c, cheliped; d, part of abdomen; e, first pleopod; f, second pleopod. — g, ♀ 9.1 × 9.5 mm (MP-B 18360), part of abdomen.

Third maxillipeds and thoracic sterna covered with granules.

Male abdomen consists of 5 somites (1 + 2 + R + 6 + T), female one of 7. Both are granular, the last somite excepted.

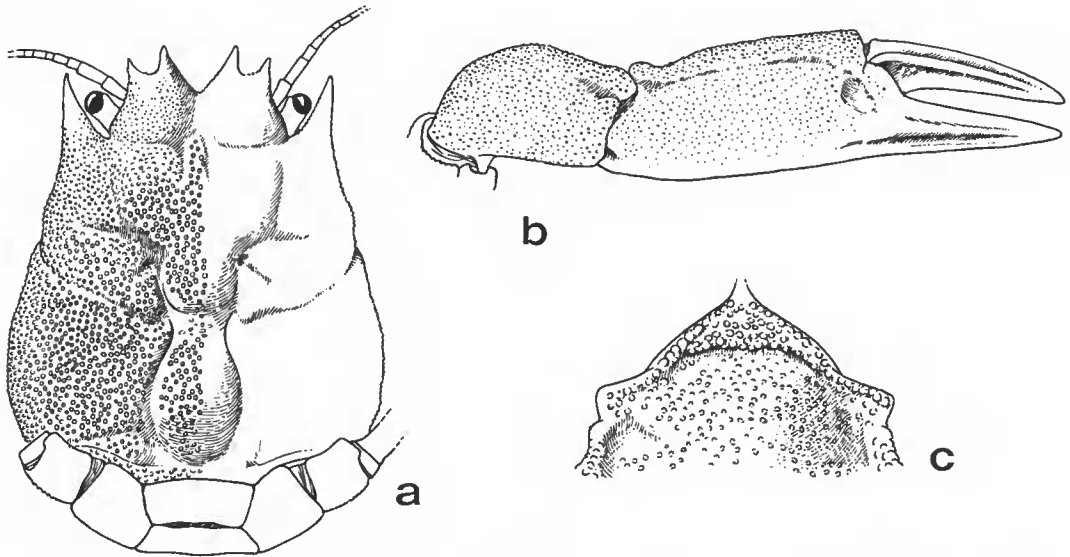


FIG. 4. — *Ethusa zurstrasseni* Doflein, 1904, ♂ holotype 8.2 × 7.1 mm, « Valdivia », st. 254, 0°29.3' S-42°47.6' E, 977 m (Zoologisches Museum, Berlin) : a, carapace; b, cheliped; c, anterior sternal shield.

REMARKS. — This new species is closely allied to four species of *Ethusa* : *E. izuensis* Sakai, 1939; *E. zurstrasseni* Doflein, 1904; *E. sinespina* Kensley, 1969; *E. granulosa* Ihle, 1916. It may be distinguished from *E. izuensis* by the dorsal surface of carapace closely granulated, the first male abdominal segment granular and the propodus of P3 relatively slender in female. It differs from *E. zurstrasseni* (fig. 4), the holotype of which we could examine, in having the palm of male chelipeds swollen and the fingers of the same with indistinct teeth. It differs from *E. sinespina* (fig. 5), a paratype of which we could examine, in having the fingers of the male chelipeds with a smaller gap when closed and their cutting edges with indistinct teeth, and in having the telson of male abdomen slightly acute; most of all, the male pleopods are very different in the two species (fig. 3e-f and 5e-f). It differs from *E. granulosa* in having the first abdominal somite in female shorter and the surface near posterior border of merus of P2 and P3 granular.

Ethusa hirsuta McArdle, 1900

(Fig. I F)

Ethusa hirsuta McArdle, 1900 : 474; MACGILCHRIST, 1905 : 257; ALCOCK and MACGILCHRIST, 1905, pl. 72, fig. 1, 1a ; IHLE, 1916 : 142-143.

MATERIAL EXAMINED. — Madagascar, N.O. "Vauban", N.W. coast, trawling 50, 15°19.0' S-16°11.8' E, 405 m : 1 ♀ ovig. 8.0 × 8.5 mm (MP-B 18272). — W. coast, trawling 61, 23°36.1' S-43°31.0' E, 445-455 m : 1 ♀ ovig. 9.0 × 9.5 mm (MP-B 18350). — W. coast, trawling 94, 22°18' S-43°04.7' E, 400 m : 1 ♀ 11.1 × 12.0 mm (MP-B 18247).

DESCRIPTION

Carapace of female broader than long, its dorsal surface and sterna densely covered with hairs. Grooves of posterior portion of gastric region and cardiac-intestinal region distinct. Branchial regions swollen.

Chelipeds of female small and equal; fingers longer than palm, their cutting edges with small teeth.

Merus of second and third pereopods 4.5-4.8 times longer than broad. Propodus of the same legs relatively short; dactylus 1.3-1.5 times longer than propodus.

Abdomen of 7 somites in female; 3rd somite the broadest, 6th somite the longest. Telson bluntly triangular.

REMARKS. — The frontal and exorbital teeth in this species closely resemble those of *Ethusa indica* Alcock, 1894, but the merus and the propodus of P2 and P3 in the latter are very long. These specimens agree with MCARDLE's description (1900 : 474) but they differ from ALCOCK and MACGILCHRIST's figures (1905, pl. 72, fig. 1, 1a) in having an oblique indistinct ridge (instead of a distinct groove) on branchial regions and in the lateral part of the cardiac-intestinal region being swollen.

DISTRIBUTION. — Madagascar, Sri Lanka and Indonesia.

Ethusa sinespina Kensley, 1969

(Fig. 5; pl. II C)

Ethusa sinespina Kensley, 1969 : 161, fig. 4a-c; 1981 : 38.

MATERIAL EXAMINED. — Madagascar, N.O. "Vauban", N.W. coast, dredging, 12°40.0' S-48°18.0' E, 205-185 m : 2 juv. 4.0 × 3.9 and 4.2 × 4.0 mm (MP-B 18359); 1 ♂ 6.5 × 6.5 mm (MP-B 18273). — Trawling 45, 15°20.5' S-46°09.5' E, 310-350 m : 1 ♂ (broken) 6.9 × 6.9 mm (MP-B 18361). — South Africa (Natal), "Anton Bruun", st. BRU 390 S, 29°35' S-31°42' E, 138 m : 1 ♀ paratype 5.8 × 5.2 mm (South African Museum n° A12649).

COMPLEMENTARY DESCRIPTION

In male carapace as long as broad, covered with close-set fine granules and fine scattered short hairs; anterior portion narrower than posterior, regions more distinct than in female. Frontal and exorbital teeth stout with acute tip, their borders with few and relatively long feathered hairs.

Chelipeds, except fingers, closely covered with granules and with scattered short hairs. Palm longer than high; cutting edges of the fingers with 3 or 4 small teeth.

Third pereopods the longest. Each segment of the pereopods covered with fine granules and short hairs, the granules of the dactylus being smaller than those of the other segments.

Male abdomen consists of 5 somites (1 + 2 + R + 6 + T) covered with fine granules. First somite narrower and longer than the second. Lateral sides of base of somite R swollen. Somite 6 transversely square. Telson roundly triangular.

Male pleopods 1 and 2 represented on figures 5e-f.

DISTRIBUTION. — South Africa (Natal) and Madagascar (N.W. coast).

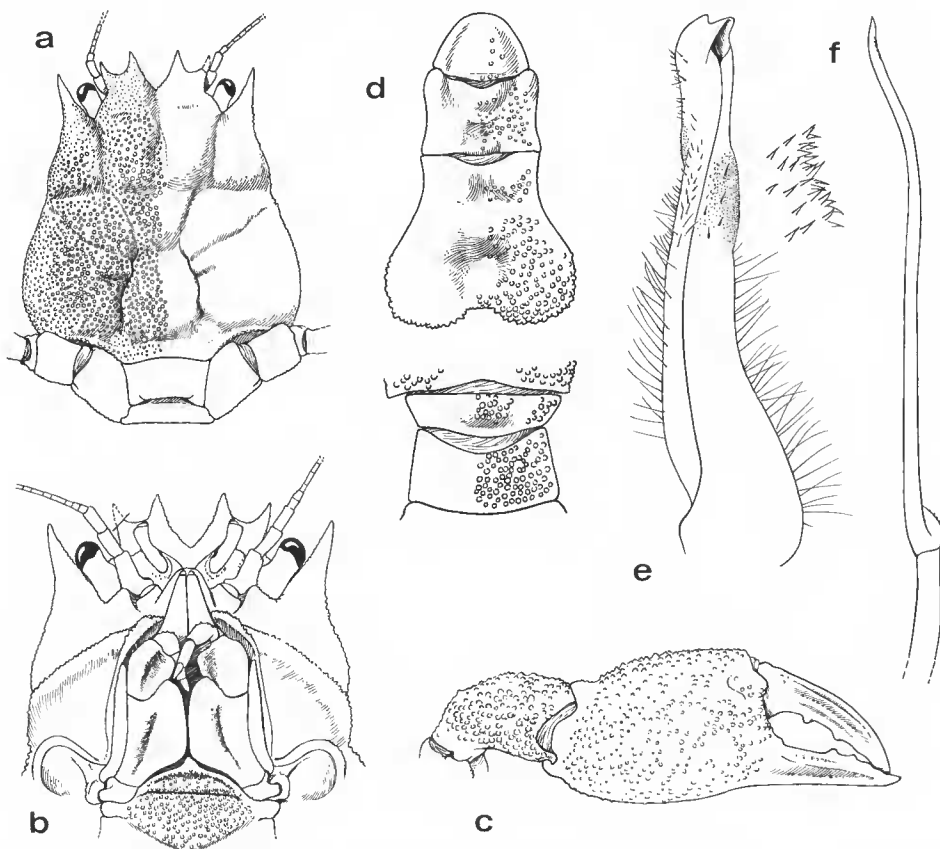


FIG. 5. — *Ethusa sinespina* Kensley, 1969, ♂ 6.5 × 6.5 mm (MP-B 18273) : a, carapace, dorsal view; b, carapace, anteroventral region; c, cheliped; d, abdomen, somites 1-2 and 3-5; e, first pleopod; f, second pleopod.

Genus *ETHUSINA* Smith, 1884

Ethusina longipes sp. nov.

(Fig. 6; pl. II D-E)

MATERIAL EXAMINED. — Madagascar, N.O. "Vauban", N.W. coast, trawling 131, 13°46' S-47°33' E, 1490-1600 m : 1 ♂ 6.1 × 6.1 mm (MP-B 18355). — Trawling 142, 13°45.6' S-47°34.2' E, 1250-1300 m : 1 ♂ 6.0 × 6.0 mm (MP-B 18326); 1 ♂ 6.1 × 6.1 mm (MP-B 18270).

TYPES. — The male (MP-B 18270) is the holotype, the two others are the paratypes.

DESCRIPTION

Carapace as long as broad, dorsal surface finely granular and with short hairs; regions slightly distinct. Branchial regions swollen. Cardiac-intestinal region tumid and elevated above the level of the branchial convexities. Frontal region swollen, its anterior border divided into 4 teeth: the median ones shorter than the lateral. Exorbital tooth long and needle-like, its tip reaching only the basal portion of the frontal teeth.

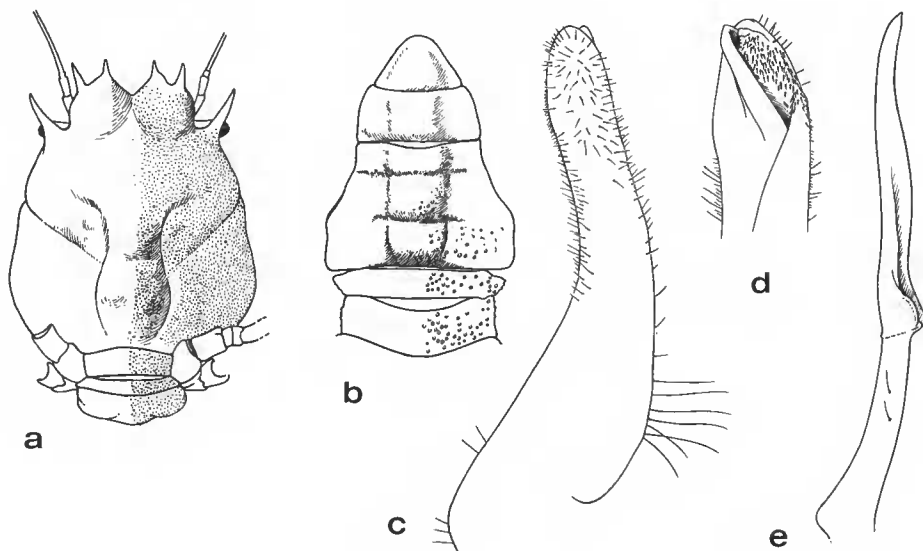


FIG. 6. — *Ethusina longipes* sp. nov., ♂ holotype 6.1 × 6.9 mm (MP-B 18270): a, carapace; b, abdomen; c, d, first pleopod; e, second pleopod.

Chelipeds symmetrical and smooth. Distal part of merus broader than basal one, with inner and outer angles produced. Palm 1.5 times longer than high. Fingers as long as palm, with no gap between them when closed and with their cutting edges very slightly crenellated on all their length.

Second and third pereiopods very long, slender, smooth and naked. Merus cylindrical and about 12 times longer than broad. Dactylus longer than propodus.

Fourth and fifth pereiopods slender and covered with scattered short hairs.

Male abdomen consists of 5 somites (1 + 2 + R + 6 + T) and is covered with short hairs. The first somite is longer than the second, the sixth one is 2.3 times broader than long, the telson is bluntly triangular.

Male pleopods represented on figures 6c-e.

REMARKS. — This new species differs from the other species of the genus by its second and third pereiopods very long and smooth, with a merus about 12 times longer than broad.

DISTRIBUTION. — Madagascar (N.W. coast).

Ethusina desciscens Alcock, 1896

(Fig. 7; pl. II F)

Ethusina desciscens Alcock, 1896 : 286; ALCOCK and MCARDLE, 1903, pl. 62, fig. 2, 2a; CHEN, 1986a : 197, fig. 15-16, pl. I, fig. 4-5; 1986b : 136, fig. 71-73.

Ethusina gracilipes; IHLE, 1916 : 147, fig. 77. Non MIERS, 1886.

MATERIAL EXAMINED. — Madagascar, N.O. "Vauban", N.W. coast, trawling 127, 18°00' S-43°00' E, 1715-1750 m : 1 ♀ 7.0 × 7.0 mm (MP-B 18364). — N.W. coast, trawling 131, 13°46' S-47°33' E, 1490-1600 m : 1 ♀ 10.0 × 10.1 mm (MP-B 18357). — N.W. coast, trawling 138, 13°48.8' S-47°29.4' E, 1800-2000 m : 2 ♀ 11.2 × 11.3 and 12.0 × 12.0 mm (MP-B 18354). — W. coast, trawling 142, 13°45.6' S-47°34.2' E, 1250-1300 m : 1 ♂ 7.5 × 7.5 mm (MP-B 18277).

REMARKS. — The male abdomen covered with fine granules consists of 5 somites (1 + 2 + R + 6 + T); the second somite is broader and shorter than first; the basal part of somite R is swollen laterally; the somite 6 is nearly 3 times broader than long and the telson is bluntly triangular. The male pleopods 1 and 2 are represented on figures 7b-d; the second is shorter than first.

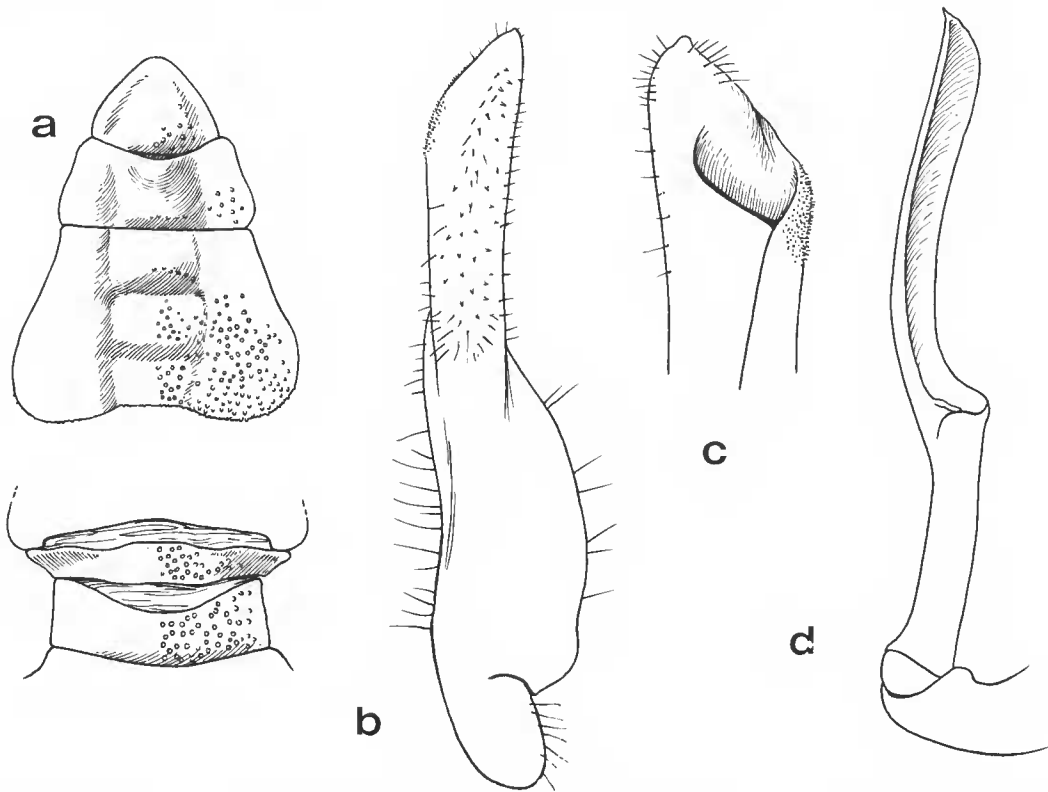


FIG. 7. — *Ethusina desciscens* Alcock, 1896, ♂ 7.5 × 7.5 mm (MP-B 18277) : a, abdomen, somites 1-2 and 3-5; b, c, first pleopod; d, second pleopod.

DISTRIBUTION. — Madagascar, Laccadive Sea, Andaman Sea, Philippines and China (South China Sea and East China Sea).

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LITERATURE CITED

- ALCOCK, A., 1894. — Natural History Notes from H. M. Indian Marine Survey Steamer « Investigator ». Ser. II. N° 1. On the results of Deep-sea Dredging during the Season of 1890-1891. *Ann. Mag. nat. Hist.*, (6) **13** : 225-245, 321-334, 400-411.
- 1896. — Materials for a Carcinological Fauna of India. N° 2. The Brachyura Oxystomata. *J. Asiat. Soc. Beng.*, **65** (2) : 134-296, pl. 6-8.
- ALCOCK, A., and A. C. MACGILCHRIST, 1905. — Crustacea. Part XI. Illustrations of the Zoology of the Royal Indian Marine Survey Ship Investigator, pl. 68-76.
- ALCOCK, A., and A. F. MCARDLE, 1903. — Crustacea. Part X. Illustrations of the Zoology of the Royal Indian Marine Survey Ship Investigator, pl. 60-67.
- BARNARD, K. H., 1950. — Descriptive Catalogue of South African Decapod Crustacea. *Ann. S. Afr. Mus.*, **38** : 1-837, fig. 1-154.
- 1955. — Additions to the fauna-list of South African Crustacea and Pycnogonida. *Ann. S. Afr. Mus.*, **43** (1) : 1-107, fig. 1-53.
- BORRADAILE, L. A., 1903. — Marine Crustaceans. VI. The Sand crabs (Oxystomata). In : J. St. GARDINER, The Fauna and Geography of the Maldive and Laccadive Archipelagoes, **1** (4) : 434-439, fig. 115-117, pl. 22.
- CHEN, H., 1986a. — Decapod Crustacea : Dorippidae. In : Rés. Camp. MUSORSTOM I et II. — Philippines (1976, 1980), tome 2. *Mém. Mus. natn. Hist. nat.*, Paris, (A), Zool., **133** (5), 1985 (1986) : 179-203, fig. 1-16, pl. 1-2.
- 1986b. — Studies on the Dorippidae (Crustacea, Brachyura) of Chinese Waters. *Trans. chin. crust. Soc.*, (1) : 118-139, fig. 1-15.
- DOFLEIN, F., 1904. — Brachyura. In : *Wiss. Ergebn. Deutschen Tiefsee-Exped. auf dem Dampfer « Valdivia », 1898-1899*, 6. Jena : i-xiv, 1-314, fig. 1-68. Atlas, 58 pl.
- FOURMANOIR, P., 1954. — Crabes de la côte ouest de Madagascar. *Nat. malgache*, **6** (1-2) : 1-16, fig. 1-12.
- GUINOT, D., 1966. — Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyours. I. Les affinités des genres *Aethra*, *Osachila*, *Hepatus*, *Hepatella* et *Actaeomorpha*. *Bull. Mus. natn. Hist. nat.*, Paris, 2^e sér., **38** (5) : 744-762, fig. 1-24.
- HAAN, W., DE, 1833-1850. — Crustacea. In : P. F. VON SIEBOLD, *Fauna Japonica sive Descriptio animalium, quae in itinere per Japoniam, jussu et auspiciis superiorum, qui summum in India Batava Imperium tenent, suscepto, annis 1823-1830 collegit, notis, observationibus e adumbratio-*

- nibus illustravit. Lugduni Batavorum, fasc. 1-8 : I-XVII, I-XXXI, 1-243, pl. 1-55, A-J, L-Q, circ. pl. 2.
- HASWELL, W. A., 1880. — Contributions to a Monograph of Australian Leucosiidae. *Proc. Linn. Soc. N. S. W.*, 4 (1) : 44-60, pl. 5-6.
- 1882. — Catalogue of the Australian stalk- and sessile-eyed Crustacea. Sydney, The Australian Museum : III-XXIV, 1-324, fig. 1-8, pl. 1-4.
- HENDERSON, J. R., 1893. — A Contribution to Indian Carcinology. *Trans Linn. Soc. Lond.*, (2) 5 : 325-458, pl. 36-40.
- HERBST, J. F. W., 1782-1804. — Versuch einer Naturgeschichte der Krabben und Krebse. Berlin und Stralsund, 3 vol., 274 + 226 + (216) p., 72 pl. [1790, 1 (8) : 239-274, pl. 18-21; 1794, 2 (5) : 147-162, pl. 37-40; 1801, 3 (2) : 1-46, pl. 51-54].
- HERKLOTS, J. A., 1852. — Notice carcinologique. *Bijdr. Dierk.*, 1 : 35-37 [1-3], pl. 1.
- HILGENDORF, F., 1879. — Die von Hr. W. Peters in Moçambique gesammelten Crustaceen. *Mber. dt. Akad. Wiss. Berl.*, 1878 (1879) : 782-851, pl. 1-4.
- IHLE, J. E. W., 1916. — Die Decapoda Brachyura der Siboga-Expedition. II. Oxystomata, Dorippidae. *Siboga-Exped.*, Monogr. XXXIXb1, livr. 78 : 97-158, fig. 39-77.
- KENSLEY, B. F., 1969. — Decapod Crustacea from the south-west Indian Ocean. *Ann. S. Afr. Mus.*, 52 (7) : 149-181, fig. 1-16.
- 1981. — The South African Museum's Meiring Naude Cruise. Part 12. Crustacea Decapoda of the 1977, 1978, 1979 Cruises. *Ann. S. Afr. Mus.*, 83 (4) : 49-78, fig. 1-11.
- LENZ, H., 1910. — Crustaceen von Madagaskar, Ostafrika und Ceylon. In : A. VOELTZKOW, Reise in Ostafrika in den Jahren 1903-1905. Wissenschaftliche Ergebnisse. Vol. II. Stuttgart : 539-576, fig. 1-4.
- LINNÉ, C., 1767. — Systema Naturae per Regna Tria Naturae, secundum Classes, Ordines, Genera, Species, cum Characteribus, Differentiis, Synonymis, Locis. Tom. I. Pars II. 12^e edit. Editio Duodecima Reformata. Holmiae. Classis V. Insecta : 533-1068.
- MACGILCHRIST, A. C., 1905. — Natural History Notes from the R.I.M.S.S. « Investigator », Capt. T. H. Heming, R. N. (retired), commanding. Ser. III, N° 6. An Account of the new and some of the rarer Decapod Crustacea obtained during the Surveying Seasons 1901-1904. *Ann. Mag. nat. Hist.*, (7), 15 (87) : 233-268.
- MANNING, R. B., and L. B. HOLTHUIS, 1986. — Preliminary descriptions of four new species of Dorippid Crabs from the Indo-West Pacific Region (Crustacea : Decapoda : Brachyura). *Proc. biol. Soc. Wash.*, 99 (2) : 363-365, fig. 1.
- MCARDLE, A. F., 1900-1901. — Natural History Notes from R.I.M.S.S. « Investigator ». Ser. III, N° 4. Some results of the dredging season, 1899-1900. *Ann. Mag. nat. Hist.*, (7), 6 : 471-478.
- SAKAI, T., 1939. — Studies on the Crabs of Japan. IV. Brachygnatha, Brachyrhyncha. Tokyo, Yokendo : 365-741, fig. 1-129, pl. 42-111, tabl. 1.
- STEBBING, T. R. R., 1910. — General Catalogue of South African Crustacea (Part V. of S. A. Crustacea, for the Marine Investigations in South Africa). *Ann. S. Afr. Mus.*, 6 : 281-593, pl. 15-22.
- STEPHENSEN, K., 1945. — The Brachyura of the Iranian Gulf. With an Appendix. The male pleopoda of the Brachyura. In : Danish scientific Investigations in Iran, Part IV. Copenhagen, E. Munksgaard : 57-237, fig. 1-60.
- THOMASSIN, B., 1978. — Peuplements des sédiments coralliens de la région de Tuléar (S. W. de Madagascar) et leur insertion dans le contexte côtier indo-pacifique. Thèse de Doctorat d'État, Univ. Aix-Marseille II : 1-494; annexe 1, fig. 1-209, tabl. 1-180, fig. 1-209; annexe 2 : 1-101; annexe 3 : 1-302. (Ronéotypée.)

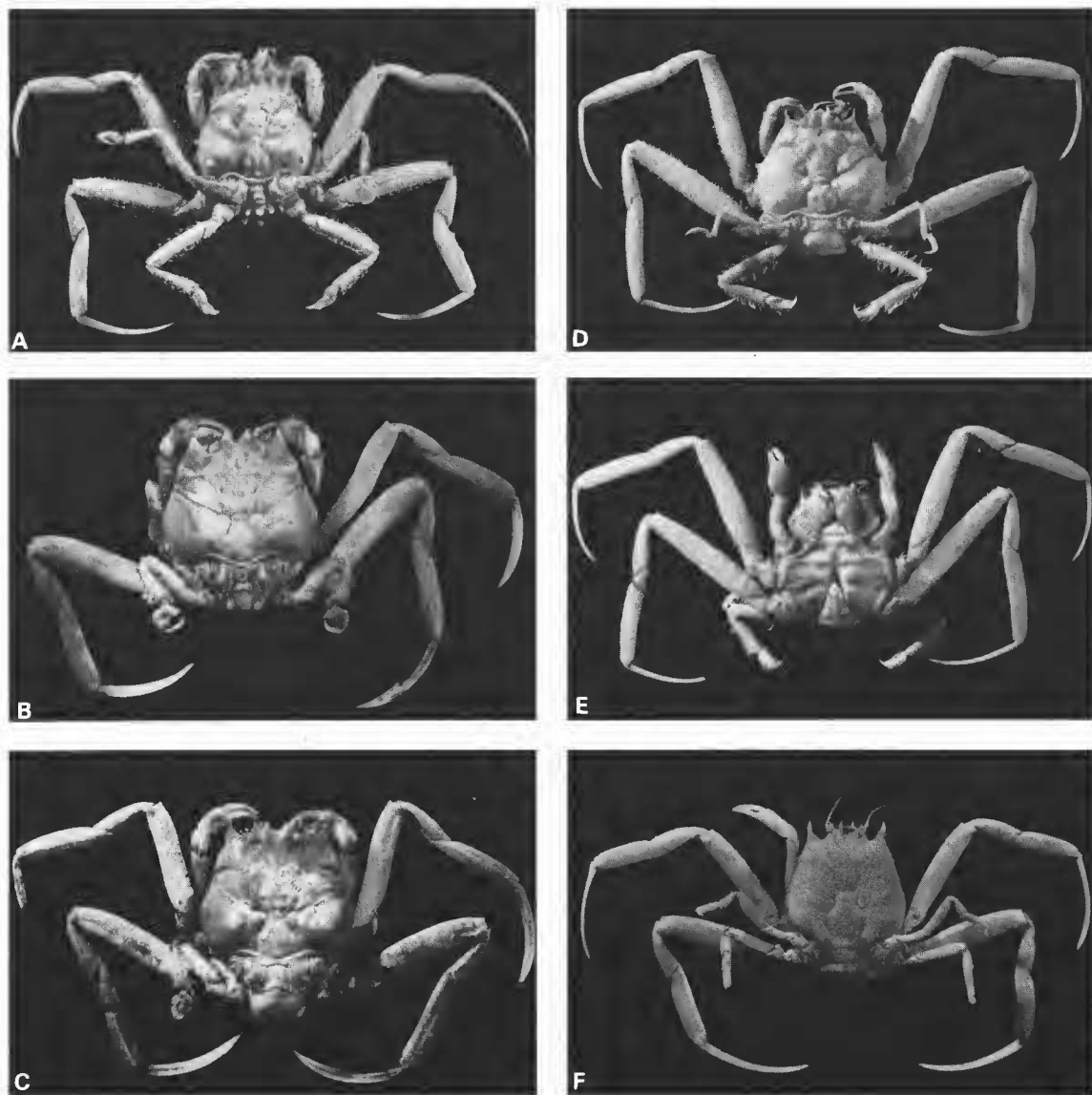


PLANCHE I

- A — *Dorippe frascone* (Herbst, 1785) : ♂ 19.6 × 20.1 mm (MP-B 18279).
B, C — *Dorippoides nudipes* Manning and Holthuis, 1986 : B, ♂ 21.7 × 26.0 mm (MP-B 18275); C, ♂ 16.0 × 19.0 mm (MP-B 18276).
D, E — *Medorippe crosnieri* sp. nov. : ♂ holotype 15.7 × 19.9 mm (MP-B 18269).
F — *Eithusa hirsuta* McArdle, 1900 : ♀ 11.1 × 12.0 mm (MP-B 18274).

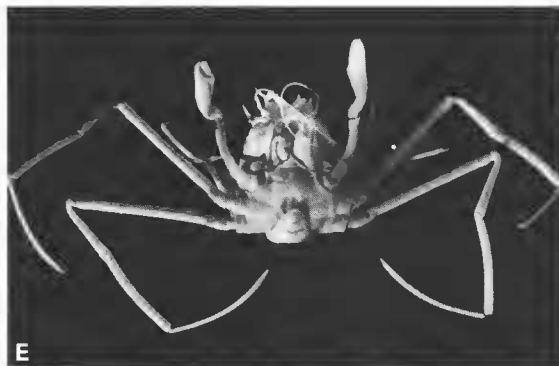


PLANCHE II

A, B — *Ethusa madagascariensis* sp. nov. : ♂ holotype 7.0 × 6.9 mm (MP-B 18271).

C — *Ethusa sinospina* Kensley, 1969 : ♂ 6.5 × 6.5 mm (MP-B 18273).

D, E — *Ethusina longipes* sp. nov. : ♂ holotype 6.1 × 6.9 mm (MP-B 18270).

F — *Ethusina desciscens* Alcock, 1896 : ♂ 7.5 × 7.5 mm (MP-B 18277).